

Attorney Docket No. U 0186 OS/MINPT
Serial No. 10/631,299
Art Unit: 1742
Applicants' RCE Submission in Response To
the Final Action of January 20, 2006

Amendments to the Claims

Please amend claims 1, 10 and 12 and add new claims 26-32 as shown in the Listing of Claims below. Claims 2-8 and 13-25 are cancelled in the Listing of Claims. The amendment adds no new matter. This Listing of Claims will replace all prior versions, and listings of the claims in the application

Listing of Claims:

Claim 1 (Currently amended): A circuit configuration for a metal solvent extraction plant comprising:

- A) an extraction section for extracting metal ions from an aqueous leach solution containing the metal ions with an organic solvent extraction solution containing at least one metal extraction reagent, wherein the extraction section consists of three countercurrent extraction stages in which the metal-containing aqueous leach solution to be extracted enters at an extraction stage 1, progresses to an extraction stage 2 and then to an extraction stage 3 where it exits as metal-depleted aqueous raffinate and the organic extraction solution enters extraction stage 3 progresses to extraction stage 2 and then to extraction stage 1 where it exits as a fully loaded organic solution; and
- B) a stripping section consisting of one stripping stage for stripping the metal ions from the metal-extraction-reagent fully loaded organic solution from extraction stage 1, thereby providing a stripped organic extraction solution which is recycled to extraction stage 3 and an aqueous solution containing the metal ions which have been stripped from the loaded organic solution.

Claims 2-8 (Cancelled)

Claim 9 (Original): The circuit configuration of claim 1 wherein the solvent extraction circuit also comprises a wash or scrubbing stage.

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Claim 10 (Currently amended): A method for increasing the metal recovery from a metal-containing aqueous leach phase containing the metal to be recovered by an organic phase containing an extraction reagent ~~on~~ in a metal solvent extraction plant that comprises two extraction stages, one and two, connected in series with countercurrent flow between the metal containing aqueous phase, which enters at extraction stage one, and an organic phase, which enters at extraction stage two, in combination with two stripping stages for stripping the metal extracted by the organic phase and recycling the stripped organic phase to extraction stage two, the method, comprising reconfiguring the plant to contain three countercurrent extraction stages, one, two and three, connected in series with countercurrent flow between the aqueous leach phase, which enters at extraction stage one and exits at extraction stage three as metal-depleted raffinate, and the organic phase, which enters at extraction stage three as stripped organic and exits at extraction stage one as loaded organic, in combination with only one stripping stage to strip the metal from the loaded organic from extraction stage one, thereby producing a stripped organic and an aqueous solution containing metal ions which have been stripped from the loaded organic solution.

Claim 11 (Original): The method of claim 10 wherein the metal solvent extraction plant is a copper metal solvent extraction plant.

Claim 12 (Currently amended): In a metal solvent extraction plant for extracting metal from a ~~metal ore~~ metal-containing aqueous phase, wherein the plant contains an extraction section for extracting metal ions from said aqueous ~~leach solution~~ phase using a substantially water-immiscible organic solvent containing at least one metal extraction reagent, and a stripping section for stripping the metal ions from the metal extraction reagent, the improvement wherein the comprising combining an extraction section which consists of three countercurrent extraction stages in which the metal-containing aqueous phase enters at an extraction stage 1, progresses to an extraction stage 2 and then to an extraction stage 3 where it exits as metal-depleted aqueous raffinate and the organic extraction solution enters at extraction stage 3, progresses to extraction

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stage 2, and then to extraction stage 1 where it exits as a fully loaded organic solution, and the
with a stripping section consists of only one stripping stage for stripping the metal ions from the
fully loaded organic solution from extraction stage 1, thereby providing a stripped organic
extraction solution which is recycled to extraction stage 3 and an aqueous solution containing the
metal ions which have been stripped from the loaded organic solution.

Claims 13-25 (Cancelled)

Claim 26 (New): A solvent extraction process for extracting metals from a metal-containing aqueous phase using an organic extraction solution comprising a water-immiscible organic solvent containing a metal extraction reagent, comprising the steps of:

- I) providing a metal value extraction circuit consisting of a first, a second and a third extraction stage, a metal-containing aqueous leach solution feed to the first extraction stage, and a single stripping stage, wherein the extraction stages include a separation apparatus, and wherein the circuit optionally includes a washing or scrubbing stage;
- II) in the first extraction stage, contacting the aqueous leach solution with a partially metal-loaded organic extraction solution from the second extraction stage to extract metal values from the aqueous leach solution;
- III) separating the metal-loaded organic extraction solution from the partially metal-depleted aqueous leach solution resulting from step II);
- IV) passing the metal-loaded organic extraction solution from step III) to a single stripping stage to transfer the metal values to an aqueous stripping solution which is passed to a metal recovery apparatus and to provide a stripped organic extraction solution for reuse in the extraction circuit;
- V) in the second extraction stage, contacting the partially metal-depleted aqueous leach solution from step III) with a partially metal-loaded organic extraction solution from the third extraction stage to further extract metal values from the partially metal-depleted aqueous leach solution;

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- VI) separating the partially metal-depleted aqueous leach solution from the partially metal-loaded organic extraction solution resulting from step V);
- VII) in the third extraction stage, contacting the partially metal-depleted aqueous leach solution from step VI) with the stripped organic extraction solution from step IV) to extract additional metal values from the aqueous leach solution from step VI);
- VIII) separating the depleted aqueous leach solution from the partially metal-loaded organic extraction solution resulting from step VII);
- IX) removing the depleted aqueous leach solution from step VIII) from the extraction circuit and passing the partially metal-loaded organic extraction solution from step VIII) to the second extraction stage.

Claim 27 (New): The process of claim 26, wherein in step I) the metal value in the metal-containing aqueous leach solution comprises copper.

Claim 28 (New): The process of claim 26, wherein in step I) the metal value in the metal-containing aqueous leach solution comprises nickel.

Claim 29 (New): The process of claim 26, wherein the extraction reagent used in the process comprises an alkylated hydroxyoxime.

Claim 30 (New): The process of claim 29, wherein the extraction agent comprises an alkylated acetophenone oxime, an alkylated salicylaldoxime or a mixture thereof.

Claim 31 (New): The process of claim 30, wherein the extraction agent comprises 5-nonyl-2-hydroxyacetophenone oxime, 5-nonylsalicylaldoxime, 5-dodecylsalicylaldoxime or a mixture of two or more of them.

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Claim 32 (New): The process of claim 26, further comprising at least one wash or scrubbing stage.